SA-VE445H/WMS445/ SS-MS445

SERVICE MANUAL

Ver 1.1 2003. 04

US Model
Canadian Model
E Model
Australian Model

The SA-VE445H system consists of one unit of SA-WMS445 and five units of SS-MS445.

SA-WMS445 SS-MS445 (front and rear) SS-MS445 (center)

SPECIFICATIONS

SA-VE445H
For the U.S. model
AUDIO POWER SPECIFICATIONS
POWER OUTPUT AND TOTAL HARMONIC DISTORTION: with 6 ohm loads both channels driven, from 20 – 200 Hz; rated 135 watts per channel minimum RMS power, with no more than 0.8% total harmonic distortion from 250 milliwatts to rated output.

SS-MS445 (front, center, and surround speakers)

Speaker system	2 way, magnetically shielded
Speaker units	Woofer: 5.7 cm (2 1/4 in.), balanced dome type Tweeter: 2.5 cm (1 in.), balance dome type
Enclosure type	Bass reflex
Rated impedance	8 ohms
Power handling capacity	
Maximum input power:	120 watts
Sensitivity level	84 dB (1 W, 1 m)
Frequency range	120 Hz – 50,000 Hz
Dimensions (w/h/d)	Approx. 88 × 172 × 133 mm (3 1/2 × 6 7/8 × 5 1/4 in.) including front grille
Mass	Approx. 1.3 kg (2 lb 14 oz) each

SA-WMS445 (subwoofer)

Speaker system	Active subwoofer, magnetically shielded
Speaker unit	Woofer: 20 cm (8 in.), cone type
Enclosure type	Advanced SAW type
Reproduction frequency range	26 Hz – 200 Hz
Continuous RMS power output	135 W (6 ohms 20 Hz – 20 kHz, 0.8% THD) (US, CND model) 120 W (6 ohms 20 Hz – 20 kHz, 0.8% THD) (AUS, SP, MY model)

Inputs
LINE IN (input pin jack)
SPEAKER IN (input terminals) (US, CND model)

Outputs (US, CND model)
SPEAKER OUT (output terminals)

General

Power requirements	120 V AC, 60 Hz (US, CND model) 220 – 240 V AC, 50/60 Hz (AUS model) 110 – 120/220 – 240 V AC, 50/60 Hz (SP, MY model)
Power consumptions	90 W 1 W (standby mode)
Dimensions (w/h/d)	Approx. 230 × 392 × 464 mm (9 1/8 × 15 1/2 × 18 3/8 in.), including front grille (US, CND model) Approx. 230 × 392 × 447 mm (9 1/8 × 15 1/2 × 17 5/8 in.), including front grille (AUS, SP, MY model)
Mass	Approx. 13.2 kg (29 lb 2 oz)

Supplied accessories
Foot pads (4 × 5)
Audio connecting cord (1)
Speaker connecting cords, 10 m (32.8 ft) (2)
Speaker connecting cords, 3.5 m (11.5 ft) (3)

Design and specifications are subject to change without notice.

- Abbreviation
  CND : Canadian model
  AUS : Australian model
  SP : Singapore model
  MY : Malaysia model

MICRO SATELLITE SYSTEM

9-877-090-02
2003D0400-1
© 2003. 04
Sony Corporation
Home Audio Company
Published by Sony Engineering Corporation

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.

2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

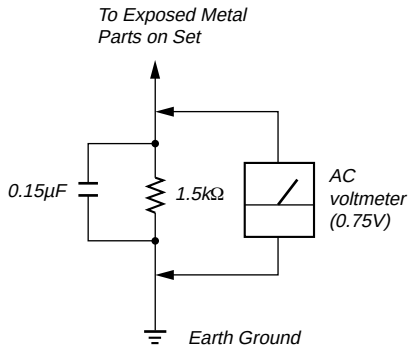


Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

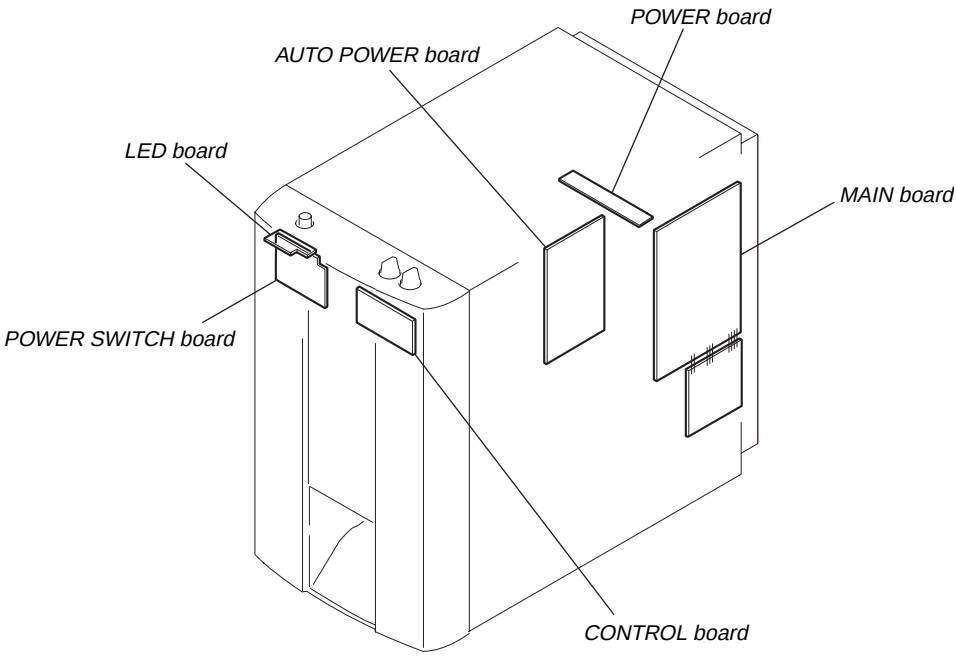
1. DIAGRAMS
1-1. Circuit Boards Location (SA-WMS445) 3
1-2. Printed Wiring Boards (SA-WMS445) 5
1-3. Schematic Diagram (SA-WMS445) 6

2. EXPLODED VIEWS
2-1. Front Panel Section (SA-WMS445) 7
2-2. Rear Panel Section (SA-WMS445) 8
2-3. Front, Center, and Surround Speakers Section (SS-MS445) 9

3. ELECTRICAL PARTS LIST 10

SECTION 1
DIAGRAMS

1-1. CIRCUIT BOARDS LOCATION (SA-WMS445)



Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- : nonflammable resistor.
- : panel designation.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

- : B+ Line.
- : B– Line.
- Voltage is dc with respect to ground under no-signal (detuned) condition.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  : AUDIO
- Abbreviation
  CND : Canadian model.
  AUS : Australian model.
  SP : Singapore model.
  MY : Malaysia model.

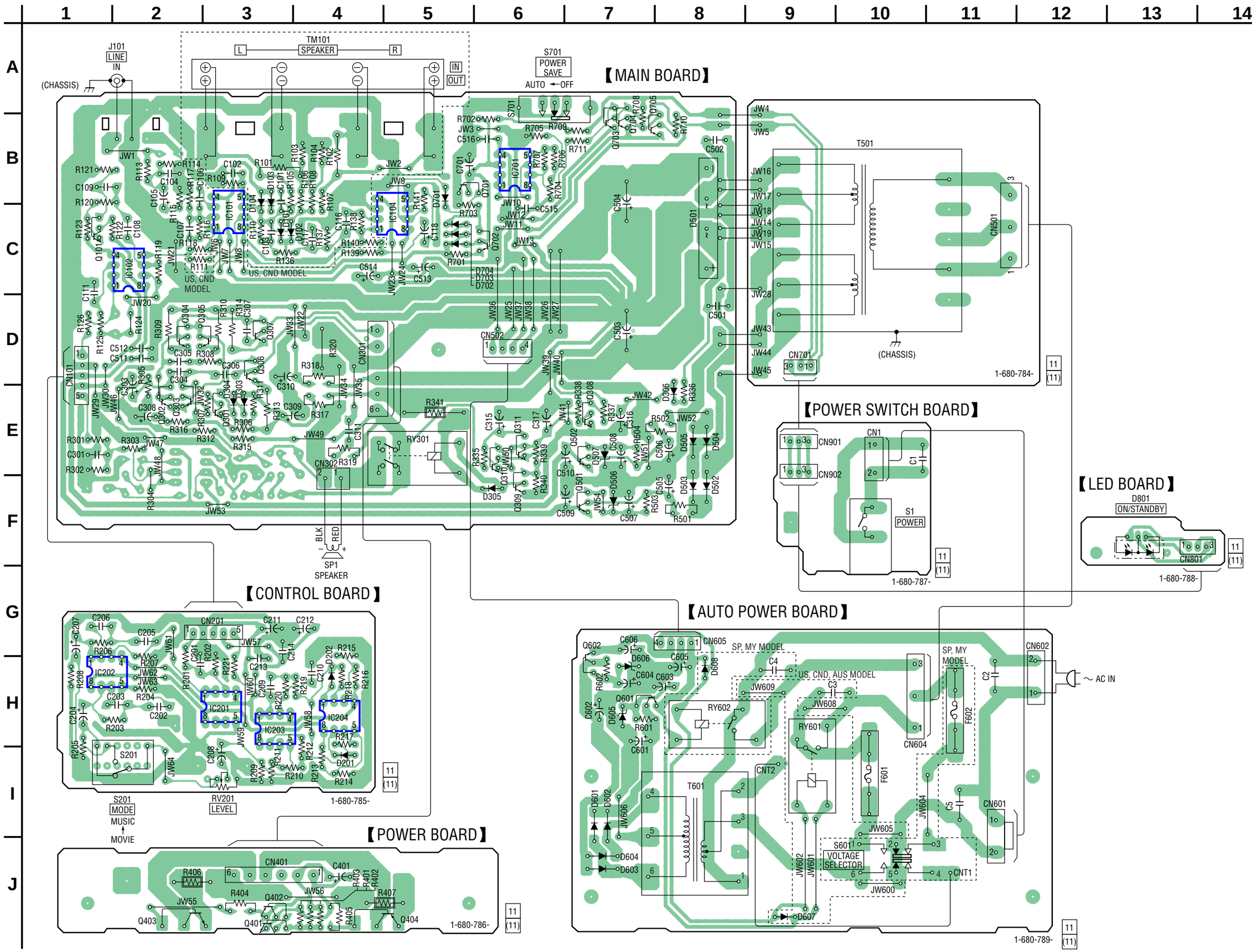
Note on Printed Wiring Boards:

- : parts extracted from the component side.
- : Pattern from the side which enables seeing.
- Abbreviation
  CND : Canadian model.
  AUS : Australian model.
  SP : Singapore model.
  MY : Malaysia model.

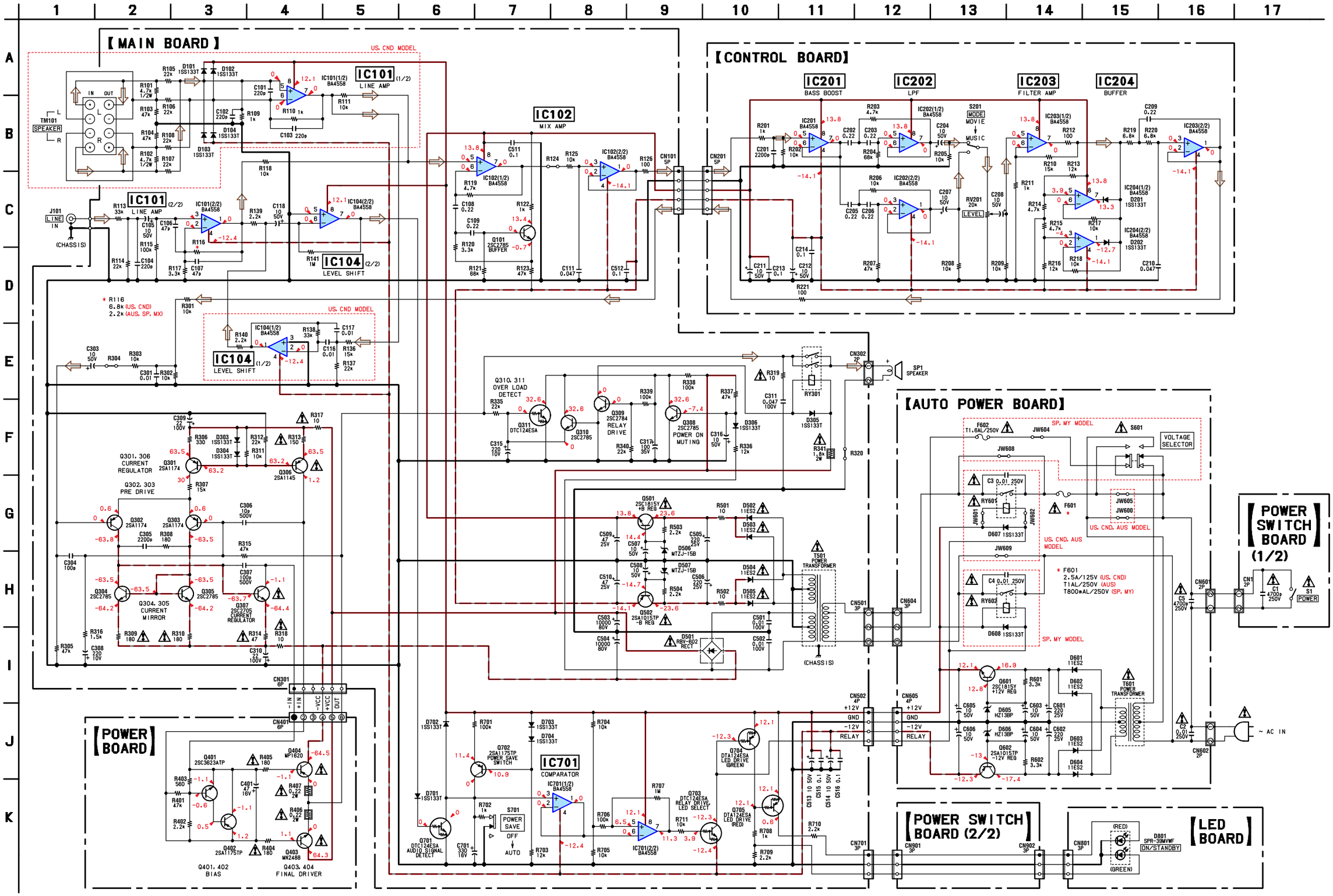
- **Semiconductor Location**

Ref. No.	Location
D101	C-3
D102	C-4
D103	B-3
D104	B-3
D201	I-4
D202	H-4
D303	E-3
D304	E-3
D305	F-6
D306	E-8
D501	C-8
D502	E-8
D503	E-8
D504	E-8
D505	E-8
D506	F-7
D507	E-7
D601	I-7
D602	I-7
D603	J-7
D604	J-7
D605	H-7
D606	H-7
D607	J-9
D608	H-8
D701	B-5
D702	C-5
D703	C-5
D704	C-5
D801	F-13
IC101	C-3
IC102	C-2
IC104	C-5
IC201	H-3
IC202	H-1
IC203	H-3
IC204	H-4
IC701	B-6
Q101	C-1
Q301	E-3
Q302	E-2
Q303	E-2
Q304	D-2
Q305	D-3
Q306	D-3
Q307	D-3
Q308	E-7
Q309	F-6
Q310	E-6
Q311	E-6
Q401	J-3
Q402	J-3
Q403	J-2
Q404	J-5
Q501	F-7
Q502	E-7
Q601	H-7
Q602	G-7
Q701	B-6
Q702	C-6
Q703	B-7
Q704	B-7
Q705	A-7

1-2. PRINTED WIRING BOARDS (SA-WMS445) • Refer to page 3 for Circuit Boards Location.



1-3. SCHEMATIC DIAGRAM (SA-WMS445)



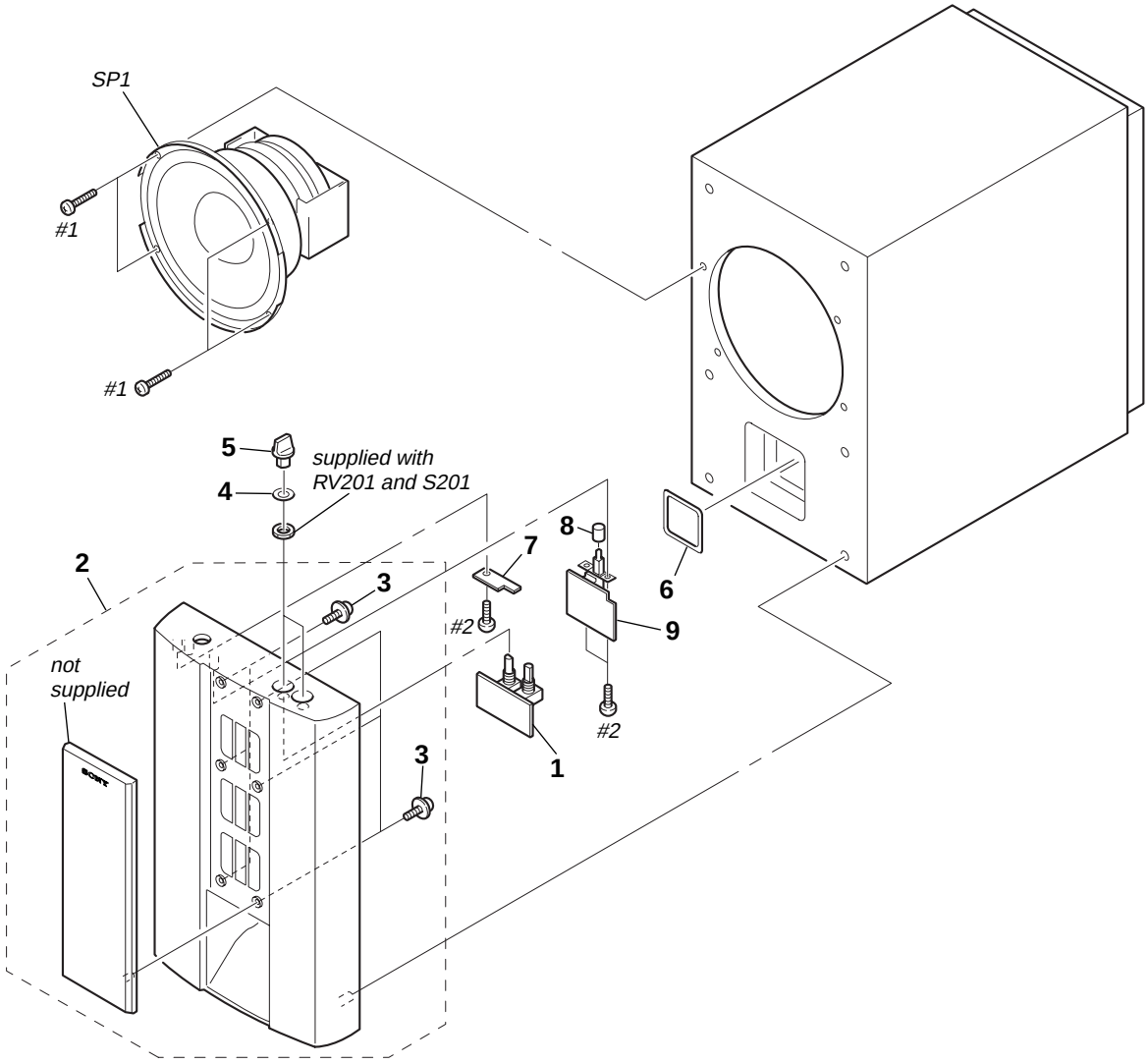
SECTION 2
EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Abbreviation
  CND : Canadian model
  AUS : Australian model
  SP : Singapore model
  MY : Malaysia model
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ Parts Color ↑ Cabinet's Color
- Accessories are given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

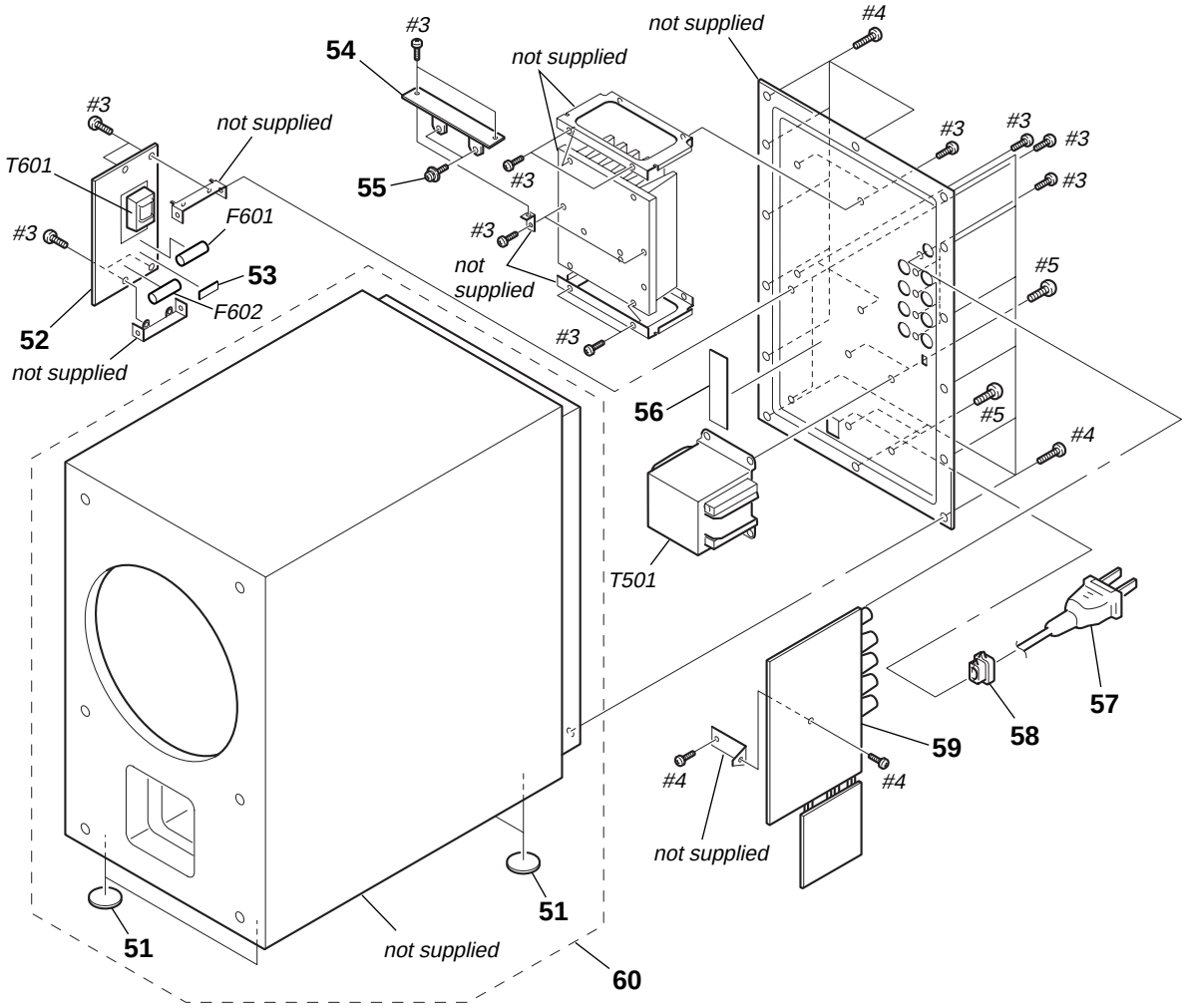
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

2-1. FRONT PANEL SECTION (SA-WMS445)



Ref. No.	Part No.	Description	Remark
1	1-680-785-11	CONTROL BOARD	
2	X-4955-519-1	PANEL ASSY, FRONT (US,CND)	
2	X-4955-520-1	PANEL ASSY, FRONT (AUS,SP,MY)	
3	3-703-564-21	SCREW, TAPPING	
4	4-227-298-01	SHEET	
5	4-999-482-51	KNOB (VOL)	
6	4-231-866-01	PACKING	
7	1-680-788-11	LED BOARD	
8	4-973-938-61	KNOB (A), PUSH	
9	1-680-787-11	POWER SWITCH BOARD	
SP1	1-529-296-12	SPEAKER (20cm) (WOOFER) (AUS,SP,MY)	
SP1	1-825-151-11	SPEAKER (20cm) (WOOFER) (US,CND)	
#1	7-685-664-79	SCREW +P 4X20 TYPE1	
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	

2-2. REAR PANEL SECTION (SA-WMS445)

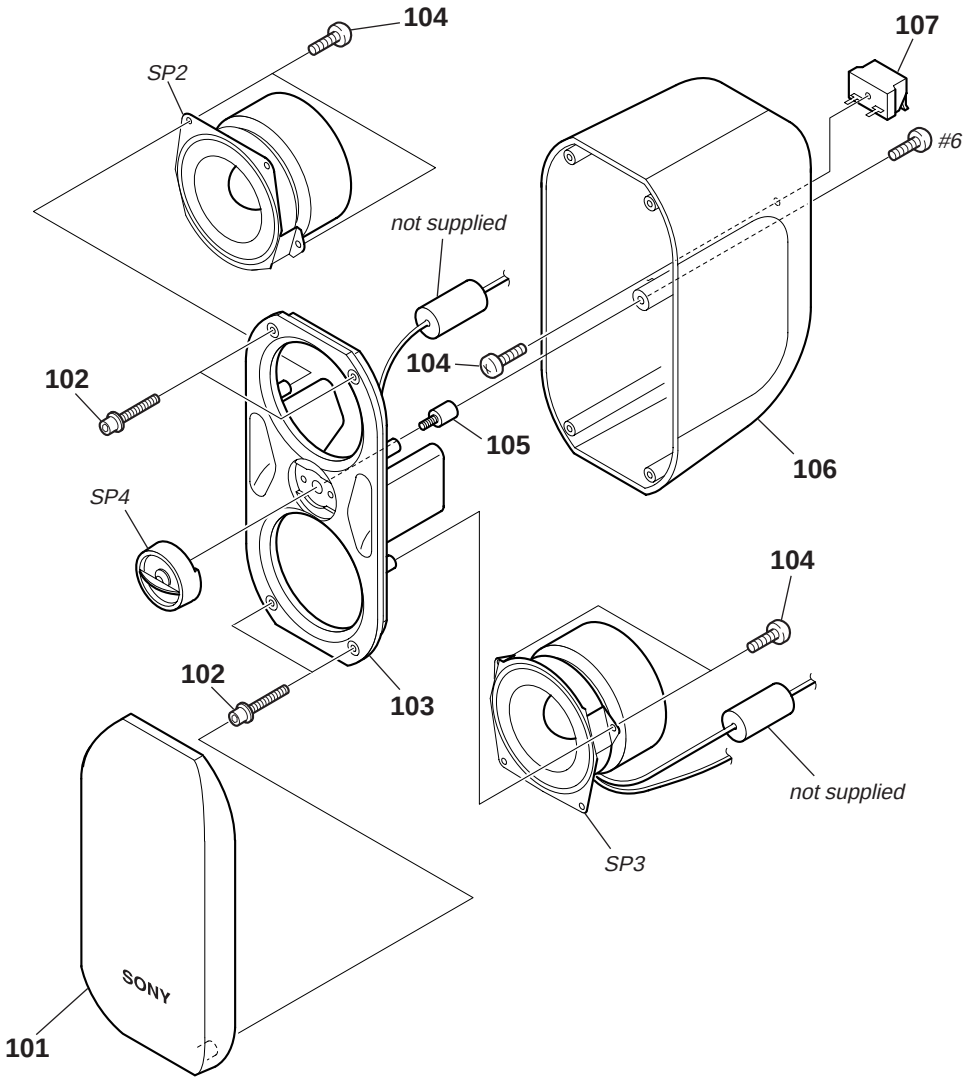


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
51	4-235-237-01	FOOT (AUS,SP,MY)	
51	4-981-864-01	FOOT (US,CND)	
52	1-680-789-11	AUTO POWER BOARD	
* 53	3-701-946-24	LABEL, FUSE RATING (US,CND)	
54	1-680-786-11	POWER BOARD	
55	3-905-609-01	SCREW (TRANSISTOR)	
* 56	3-703-044-26	LABEL, CAUTION (US,CND)	
⚠57	1-696-845-31	CORD, POWER (AUS)	
⚠57	1-769-744-52	CORD, POWER (SP,MY)	
⚠57	1-783-531-11	CORD, POWER (US,CND)	
* 58	3-703-244-00	BUSHING (2104), CORD	
59	A-4732-162-A	MAIN BOARD, COMPLETE (AUS,SP,MY)	
59	A-4732-172-A	MAIN BOARD, COMPLETE (US,CND)	
60	A-4736-759-A	CABINET ASSY, SPEAKER (US,CND)	
60	A-4736-769-A	CABINET ASSY, SPEAKER (AUS,SP,MY)	

Ref. No.	Part No.	Description	Remark
⚠F601	1-532-463-31	FUSE (T1AL/250V) (AUS)	
⚠F601	1-532-501-31	FUSE (T0.8AL/250V) (SP,MY)	
⚠F601	1-533-418-11	FUSE, GLASS CYLINDRICAL (DIA.5) (2.5A/125V) (US,CND)	
⚠F602	1-532-503-31	FUSE (T1.6AL/250V) (SP,MY)	
⚠T501	1-435-999-11	TRANSFORMER, POWER (US,CND)	
⚠T501	1-437-219-12	TRANSFORMER, POWER (SP,MY)	
⚠T501	1-437-246-11	TRANSFORMER, POWER (AUS)	
⚠T601	1-435-993-11	TRANSFORMER, POWER (US,CND)	
⚠T601	1-435-994-11	TRANSFORMER, POWER (AUS)	
⚠T601	1-435-995-11	TRANSFORMER, POWER (SP,MY)	
#3	7-685-647-79	SCREW +P 3X10 TYPE2 NON-SLIT	
#4	7-685-663-79	SCREW +BVTP 4X16 TYPE2 N-S	
#5	7-685-660-19	SCREW +BVTP 4X10 TYPE2 N-S	

2-3. FRONT, CENTER, AND SURROUND SPEAKERS SECTION (SS-MS445)



Ref. No.	Part No.	Description	Remark
101	X-4955-346-1	FRAME (V) ASSY, GRILLE (for VERTICAL)	
101	X-4955-347-1	FRAME (H) ASSY, GRILLE (for HOLIZONTAL)	
102	4-244-813-01	BOLT, ORNAMENTAL	
103	4-244-814-01	PANEL, FRONT	
104	4-986-971-11	SCREW (3.5)	
105	4-238-824-01	SCREW	

Ref. No.	Part No.	Description	Remark
106	X-4955-345-1	CABINET ASSY	
107	1-694-516-21	TERMINAL, SPEAKER	
SP2	1-825-313-11	SPEAKER (5.7cm) (WOOFER)	
SP3	1-825-313-11	SPEAKER (5.7cm) (WOOFER)	
SP4	1-825-314-11	SPEAKER (2.5cm) (TWEETER)	
#6	7-682-549-09	SCREW +B 3X10	

SECTION 3
ELECTRICAL PARTS LIST

AUTO POWER CONTROL

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ, for example:
  uA.. : µA.. uPA.. : µPA..
  uPB.. : µPB.. uPC.. : µPC.. uPD.. : µPD..
- CAPACITORS
  uF : µF
- COILS
  uH : µH
- Abbreviation
  CND : Canadian model
  AUS : Australian model
  SP : Singapore model
  MY : Malaysia model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	1-680-789-11	AUTO POWER BOARD			
		**********			
	1-533-217-31	HOLDER, FUSE			
		< CAPACITOR >			
⚠C2	1-113-925-11	CERAMIC	0.01uF	20%	250V
⚠C3	1-113-925-11	CERAMIC	0.01uF	20%	250V (US,CND,AUS)
⚠C4	1-113-925-11	CERAMIC	0.01uF	20%	250V (SP,MY)
⚠C5	1-113-924-11	CERAMIC	0.0047uF	20%	250V
C601	1-104-666-11	ELECT	220uF	20%	25V
C602	1-104-666-11	ELECT	220uF	20%	25V
C603	1-126-964-11	ELECT	10uF	20%	50V
C604	1-126-964-11	ELECT	10uF	20%	50V
C605	1-126-964-11	ELECT	10uF	20%	50V
C606	1-126-964-11	ELECT	10uF	20%	50V
		< CONNECTOR >			
* CN601	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
CN602	1-564-321-00	PIN, CONNECTOR (3.96mm PITCH) 2P			
* CN604	1-564-687-11	PIN, CONNECTOR (3.96mm PITCH) 3P			
CN605	1-564-507-11	PLUG, CONNECTOR 4P			
		< DIODE >			
D601	8-719-024-99	DIODE 11ES2-NTA2B			
D602	8-719-024-99	DIODE 11ES2-NTA2B			
D603	8-719-024-99	DIODE 11ES2-NTA2B			
D604	8-719-024-99	DIODE 11ES2-NTA2B			
D605	8-719-068-42	DIODE HZ13BP-TK			
D606	8-719-068-42	DIODE HZ13BP-TK			
D607	8-719-991-33	DIODE 1SS133T-77 (US,CND,AUS)			
D608	8-719-991-33	DIODE 1SS133T-77 (SP,MY)			
		< TRANSISTOR >			
Q601	8-729-205-11	TRANSISTOR 2SC1815Y-TPE2			
Q602	8-729-231-13	TRANSISTOR 2SA1015TP-Y			
		< RESISTOR >			
R601	1-247-843-11	CARBON	3.3K	5%	1/4W
R602	1-247-843-11	CARBON	3.3K	5%	1/4W
		< RELAY >			
⚠RY601	1-755-458-11	RELAY (US,CND,AUS)			
⚠RY602	1-755-458-11	RELAY (SP,MY)			
		< SWITCH >			
⚠S601	1-771-474-11	SWITCH, POWER (VOLTAGE SELECTOR) (SP,MY)			
		**********			
	1-680-785-11	CONTROL BOARD			
		**********			
		< CAPACITOR >			
C201	1-130-475-00	MYLAR	0.0022uF	5%	50V
C202	1-131-696-11	FILM	0.22uF	5%	50V
C203	1-131-696-11	FILM	0.22uF	5%	50V
C204	1-126-964-11	ELECT	10uF	20%	50V
C205	1-131-696-11	FILM	0.22uF	5%	50V
C206	1-131-696-11	FILM	0.22uF	5%	50V
C207	1-126-964-11	ELECT	10uF	20%	50V
C208	1-126-964-11	ELECT	10uF	20%	50V
C209	1-131-696-11	FILM	0.22uF	5%	50V
C210	1-131-688-31	FILM	0.047uF	5%	50V
C211	1-126-964-11	ELECT	10uF	20%	50V
C212	1-126-964-11	ELECT	10uF	20%	50V
C213	1-164-159-21	CERAMIC	0.1uF		50V
C214	1-164-159-21	CERAMIC	0.1uF		50V
		< CONNECTOR >			
* CN201	1-564-508-11	PLUG, CONNECTOR 5P			
		< DIODE >			
D201	8-719-991-33	DIODE 1SS133T-77			
D202	8-719-991-33	DIODE 1SS133T-77			
		< IC >			
IC201	8-759-145-58	IC uPC4558C			
IC202	8-759-145-58	IC uPC4558C			
IC203	8-759-145-58	IC uPC4558C			
IC204	8-759-145-58	IC uPC4558C			
		< RESISTOR >			
R201	1-249-417-11	CARBON	1K	5%	1/4W
R202	1-249-429-11	CARBON	10K	5%	1/4W
R203	1-249-425-11	CARBON	4.7K	5%	1/4W
R204	1-249-439-11	CARBON	68K	5%	1/4W
R205	1-249-429-11	CARBON	10K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R206	1-249-429-11	CARBON	10K	5%	1/4W
R207	1-249-437-11	CARBON	47K	5%	1/4W
R208	1-249-429-11	CARBON	10K	5%	1/4W
R209	1-249-429-11	CARBON	10K	5%	1/4W
R210	1-249-431-11	CARBON	15K	5%	1/4W
R211	1-249-417-11	CARBON	1K	5%	1/4W
R212	1-247-807-31	CARBON	100	5%	1/4W
R213	1-249-430-11	CARBON	12K	5%	1/4W
R214	1-249-425-11	CARBON	4.7K	5%	1/4W
R215	1-249-425-11	CARBON	4.7K	5%	1/4W
R216	1-249-430-11	CARBON	12K	5%	1/4W
R217	1-249-429-11	CARBON	10K	5%	1/4W
R218	1-249-429-11	CARBON	10K	5%	1/4W
R219	1-249-427-11	CARBON	6.8K	5%	1/4W
R220	1-249-427-11	CARBON	6.8K	5%	1/4W
R221	1-247-807-31	CARBON	100	5%	1/4W
		< VARIABLE RESISTOR >			
RV201	1-225-826-11	RES, VAR, CARBON 20K (LEVEL)			
		< SWITCH >			
S201	1-771-632-12	SWITCH, ROTARY (MODE)			
**********					
	1-680-788-11	LED BOARD			
		**********			
		< CONNECTOR >			
CN801	1-564-506-11	PLUG, CONNECTOR 3P			
		< DIODE >			
D801	8-719-028-30	LED SPR-39MVWF (ON/STANDBY)			
**********					
	A-4732-162-A	MAIN BOARD, COMPLETE (AUS,SP,MY)			
	A-4732-172-A	MAIN BOARD, COMPLETE (US,CND)			
		**********			
		< CAPACITOR >			
C101	1-162-286-31	CERAMIC	220PF	10%	50V (US,CND)
C102	1-162-286-31	CERAMIC	220PF	10%	50V (US,CND)
C103	1-162-286-31	CERAMIC	220PF	10%	50V (US,CND)
C104	1-162-286-21	CERAMIC	220PF	10%	50V
C105	1-126-964-11	ELECT	10uF	20%	50V
C106	1-162-215-31	CERAMIC	47PF	5%	50V
C107	1-162-215-31	CERAMIC	47PF	5%	50V
C108	1-131-696-11	FILM	0.22uF	5%	50V
C109	1-131-696-11	FILM	0.22uF	5%	50V
C111	1-131-688-31	FILM	0.047uF	5%	50V
C116	1-136-153-00	FILM	0.01uF	5%	50V (US,CND)
C117	1-136-153-00	FILM	0.01uF	5%	50V (US,CND)
C118	1-126-964-11	ELECT	10uF	20%	50V
C301	1-131-679-31	FILM	0.01uF	5%	50V
C303	1-126-964-11	ELECT	10uF	20%	50V

Ref. No.	Part No.	Description			Remark
C304	1-162-282-31	CERAMIC	100PF	10%	50V
C305	1-162-302-11	CERAMIC	0.0022uF	30%	16V
C306	1-101-804-00	CERAMIC	10PF	5%	500V
C307	1-101-810-00	CERAMIC	100PF	5%	500V
C308	1-126-934-11	ELECT	220uF	20%	10V
C309	1-128-560-11	ELECT	22uF	20%	100V
C310	1-128-560-11	ELECT	22uF	20%	100V
C311	1-117-165-91	FILM	0.047uF	2%	100V
C315	1-126-934-11	ELECT	220uF	20%	10V
C316	1-126-964-11	ELECT	10uF	20%	50V
C317	1-126-948-11	ELECT	100uF	20%	35V
C501	1-117-162-91	FILM	0.01uF	2%	100V
C502	1-117-162-91	FILM	0.01uF	2%	100V
C503	1-100-054-11	ELECT	10000uF	20%	80V
C504	1-100-054-11	ELECT	10000uF	20%	80V
C505	1-104-666-11	ELECT	220uF	20%	25V
C506	1-104-666-11	ELECT	220uF	20%	25V
C507	1-126-964-11	ELECT	10uF	20%	50V
C508	1-126-964-11	ELECT	10uF	20%	50V
C509	1-126-947-11	ELECT	47uF	20%	25V
C510	1-126-947-11	ELECT	47uF	20%	25V
C511	1-164-159-21	CERAMIC	0.1uF		50V
C512	1-164-159-21	CERAMIC	0.1uF		50V
C513	1-126-964-11	ELECT	10uF	20%	50V
C514	1-126-964-11	ELECT	10uF	20%	50V
C515	1-164-159-21	CERAMIC	0.1uF		50V
C516	1-164-159-21	CERAMIC	0.1uF		50V
C701	1-104-661-91	ELECT	330uF	20%	16V
		< CONNECTOR >			
* CN101	1-564-508-11	PLUG, CONNECTOR 5P			
* CN301	1-564-243-11	PIN, CONNECTOR (3.96mm PITCH) 6P			
CN302	1-564-320-00	PIN, CONNECTOR (3.96mm PITCH) 2P			
* CN501	1-564-687-11	PIN, CONNECTOR (3.96mm PITCH) 3P			
CN701	1-564-506-11	PLUG, CONNECTOR 3P			
		< DIODE >			
D101	8-719-991-33	DIODE 1SS133T-77 (US,CND)			
D102	8-719-991-33	DIODE 1SS133T-77 (US,CND)			
D103	8-719-991-33	DIODE 1SS133T-77 (US,CND)			
D104	8-719-991-33	DIODE 1SS133T-77 (US,CND)			
D303	8-719-991-33	DIODE 1SS133T-77			
D304	8-719-991-33	DIODE 1SS133T-77			
D305	8-719-991-33	DIODE 1SS133T-77			
D306	8-719-991-33	DIODE 1SS133T-77			
⚠ D501	8-719-302-37	DIODE RBV-602			
⚠ D502	8-719-024-99	DIODE 11ES2-NTA2B			
⚠ D503	8-719-024-99	DIODE 11ES2-NTA2B			
⚠ D504	8-719-024-99	DIODE 11ES2-NTA2B			
⚠ D505	8-719-024-99	DIODE 11ES2-NTA2B			
D506	8-719-110-41	DIODE RD15ES-B2			
D507	8-719-110-41	DIODE RD15ES-B2			
D701	8-719-991-33	DIODE 1SS133T-77			
D702	8-719-991-33	DIODE 1SS133T-77			
D703	8-719-991-33	DIODE 1SS133T-77			
D704	8-719-991-33	DIODE 1SS133T-77			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

MAIN

Ref. No.	Part No.	Description			Remark
		< IC >			
IC101	8-759-145-58	IC uPC4558C			
IC102	8-759-145-58	IC uPC4558C			
IC104	8-759-145-58	IC uPC4558C			
IC701	8-759-145-58	IC uPC4558C			
		< JACK >			
J101	1-770-377-31	JACK, PIN 1P (LINE IN)			
		< TRANSISTOR >			
Q101	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q301	8-729-117-41	TRANSISTOR 2SA1174-P			
Q302	8-729-117-41	TRANSISTOR 2SA1174-P			
Q303	8-729-117-41	TRANSISTOR 2SA1174-P			
Q304	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q305	8-729-119-78	TRANSISTOR 2SC2785-HFE			
⚠Q306	8-729-214-51	TRANSISTOR 2SA1145-O			
⚠Q307	8-729-270-51	TRANSISTOR 2SC2705-O			
Q308	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q309	8-729-178-41	TRANSISTOR 2SC2784-P			
Q310	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q311	8-729-029-86	TRANSISTOR DTC124ESA			
⚠Q501	8-729-205-11	TRANSISTOR 2SC1815Y-TPE2			
⚠Q502	8-729-231-13	TRANSISTOR 2SA1015TP-Y			
Q701	8-729-029-86	TRANSISTOR DTC124ESA			
Q702	8-729-119-77	TRANSISTOR 2SA1175-FEK			
Q703	8-729-029-86	TRANSISTOR DTC124ESA			
Q704	8-729-029-40	TRANSISTOR DTA124ESA			
Q705	8-729-029-40	TRANSISTOR DTA124ESA			
		< RESISTOR >			
R101	1-260-107-11	CARBON	4.7K	5%	1/2W (US,CND)
R102	1-260-107-11	CARBON	4.7K	5%	1/2W (US,CND)
R103	1-249-437-11	CARBON	47K	5%	1/4W (US,CND)
R104	1-249-437-11	CARBON	47K	5%	1/4W (US,CND)
R105	1-249-433-11	CARBON	22K	5%	1/4W (US,CND)
R106	1-249-433-11	CARBON	22K	5%	1/4W (US,CND)
R107	1-249-433-11	CARBON	22K	5%	1/4W (US,CND)
R108	1-249-433-11	CARBON	22K	5%	1/4W (US,CND)
R109	1-249-417-11	CARBON	1K	5%	1/4W (US,CND)
R110	1-249-417-11	CARBON	1K	5%	1/4W (US,CND)
R111	1-249-429-11	CARBON	10K	5%	1/4W (US,CND)
R113	1-249-435-11	CARBON	33K	5%	1/4W
R114	1-249-433-11	CARBON	22K	5%	1/4W
R115	1-249-441-11	CARBON	100K	5%	1/4W
R116	1-249-421-11	CARBON	2.2K	5%	1/4W (AUS,SP,MY)

Ref. No.	Part No.	Description			Remark
R116	1-249-427-11	CARBON	6.8K	5%	1/4W (US,CND)
R117	1-247-843-11	CARBON	3.3K	5%	1/4W
R118	1-249-429-11	CARBON	10K	5%	1/4W
R119	1-249-425-11	CARBON	4.7K	5%	1/4W
R120	1-247-843-11	CARBON	3.3K	5%	1/4W
R121	1-249-439-11	CARBON	68K	5%	1/4W
R122	1-249-417-11	CARBON	1K	5%	1/4W
R123	1-249-437-11	CARBON	47K	5%	1/4W
R125	1-249-429-11	CARBON	10K	5%	1/4W
R126	1-247-807-31	CARBON	100	5%	1/4W
R136	1-249-431-11	CARBON	15K	5%	1/4W (US,CND)
R137	1-249-433-11	CARBON	22K	5%	1/4W (US,CND)
R138	1-249-435-11	CARBON	33K	5%	1/4W (US,CND)
R139	1-249-421-11	CARBON	2.2K	5%	1/4W
R140	1-249-421-11	CARBON	2.2K	5%	1/4W (US,CND)
R141	1-247-903-00	CARBON	1M	5%	1/4W
R301	1-249-429-11	CARBON	10K	5%	1/4W
R302	1-249-429-11	CARBON	10K	5%	1/4W
R303	1-249-429-11	CARBON	10K	5%	1/4W
R305	1-249-437-11	CARBON	47K	5%	1/4W
R306	1-249-411-11	CARBON	330	5%	1/4W
R307	1-249-431-11	CARBON	15K	5%	1/4W
R308	1-249-408-11	CARBON	180	5%	1/4W
⚠R309	1-249-408-11	CARBON	180	5%	1/4W
⚠R310	1-249-408-11	CARBON	180	5%	1/4W
R311	1-249-429-11	CARBON	10K	5%	1/4W
R312	1-249-433-11	CARBON	22K	5%	1/4W
⚠R313	1-249-407-11	CARBON	150	5%	1/4W
⚠R314	1-249-401-11	CARBON	47	5%	1/4W
R315	1-249-437-11	CARBON	47K	5%	1/4W
R316	1-249-419-11	CARBON	1.5K	5%	1/4W
⚠R317	1-249-393-11	CARBON	10	5%	1/4W
⚠R318	1-249-393-11	CARBON	10	5%	1/4W
⚠R319	1-249-393-11	CARBON	10	5%	1/4W
R335	1-249-433-11	CARBON	22K	5%	1/4W
R336	1-249-430-11	CARBON	12K	5%	1/4W
R337	1-249-437-11	CARBON	47K	5%	1/4W
R338	1-249-441-11	CARBON	100K	5%	1/4W
R339	1-249-441-11	CARBON	100K	5%	1/4W
R340	1-249-433-11	CARBON	22K	5%	1/4W
⚠R341	1-216-458-11	METAL OXIDE	1.8K	5%	2W F
R501	1-249-393-11	CARBON	10	5%	1/4W
R502	1-249-393-11	CARBON	10	5%	1/4W
R503	1-249-421-11	CARBON	2.2K	5%	1/4W
R504	1-249-421-11	CARBON	2.2K	5%	1/4W
R701	1-249-441-11	CARBON	100K	5%	1/4W
R702	1-249-417-11	CARBON	1K	5%	1/4W
R703	1-249-430-11	CARBON	12K	5%	1/4W
R704	1-249-429-11	CARBON	10K	5%	1/4W
R705	1-249-429-11	CARBON	10K	5%	1/4W
R706	1-249-441-11	CARBON	100K	5%	1/4W
R707	1-247-903-00	CARBON	1M	5%	1/4W
R708	1-249-417-11	CARBON	1K	5%	1/4W
R709	1-249-421-11	CARBON	2.2K	5%	1/4W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R710	1-249-421-11	CARBON	2.2K	5%	1/4W
R711	1-249-429-11	CARBON	10K	5%	1/4W
		< RELAY >			
RY301	1-515-920-11	RELAY (24V)			
		< SWITCH >			
S701	1-771-188-11	SWITCH, SLIDE (POWER SAVE)			
		< TERMINAL >			
TM101	1-537-737-11	TERMINAL BOARD (SPEAKER) (US,CND)			
**********					
	1-680-786-11	POWER BOARD			
		**********			
		< CAPACITOR >			
C401	1-126-947-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
* CN401	1-564-243-11	PIN, CONNECTOR (3.96mm PITCH) 6P			
		< TRANSISTOR >			
Q401	8-729-141-30	TRANSISTOR 2SC3623A-LK			
Q402	8-729-119-77	TRANSISTOR 2SA1175-FEK			
⚠Q403	8-749-010-25	TRANSISTOR MN2488-OPY-M			
⚠Q404	8-749-010-26	TRANSISTOR MP1620-OPY-M			
		< RESISTOR >			
R401	1-249-437-11	CARBON	47K	5%	1/4W
R402	1-249-421-11	CARBON	2.2K	5%	1/4W
R403	1-249-414-11	CARBON	560	5%	1/4W
⚠R404	1-249-408-11	CARBON	180	5%	1/4W
⚠R405	1-249-408-11	CARBON	180	5%	1/4W
⚠R406	1-217-151-00	METAL	0.22	10%	2W F
⚠R407	1-217-151-00	METAL	0.22	10%	2W F
**********					
	1-680-787-11	POWER SWITCH BOARD			
		**********			
		< CAPACITOR >			
⚠C1	1-113-924-11	CERAMIC	0.0047uF	20%	250V
		< CONNECTOR >			
* CN1	1-695-044-11	PIN, CONNECTOR (3.96mm PITCH) 2P			
		< SWITCH >			
⚠S1	1-554-920-61	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)			
**********					

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
⚠57	1-696-845-31	CORD, POWER (AUS)	
⚠57	1-769-744-52	CORD, POWER (SP,MY)	
⚠57	1-783-531-11	CORD, POWER (US,CND)	
107	1-694-516-21	TERMINAL, SPEAKER	
⚠F601	1-532-463-31	FUSE (T1AL/250V) (AUS)	
⚠F601	1-532-501-31	FUSE (T0.8AL/250V) (SP,MY)	
⚠F601	1-533-418-11	FUSE, GLASS CYLINDRICAL (DIA.5)	(2.5A/125V) (US,CND)
⚠F602	1-532-503-31	FUSE (T1.6AL/250V) (SP,MY)	
SP1	1-529-296-12	SPEAKER (20cm) (WOOFER) (SA-WMS445)	(AUS,SP,MY)
SP1	1-825-151-11	SPEAKER (20cm) (WOOFER) (SA-WMS445)	(US,CND)
SP2	1-825-313-11	SPEAKER (5.7cm) (WOOFER) (SA-MS445)	
SP3	1-825-313-11	SPEAKER (5.7cm) (WOOFER) (SA-MS445)	
SP4	1-825-314-11	SPEAKER (2.5cm) (TWEETER) (SA-MS445)	
⚠T501	1-435-999-11	TRANSFORMER, POWER (US,CND)	
⚠T501	1-437-219-12	TRANSFORMER, POWER (SP,MY)	
⚠T501	1-437-246-11	TRANSFORMER, POWER (AUS)	
⚠T601	1-435-993-11	TRANSFORMER, POWER (US,CND)	
⚠T601	1-435-994-11	TRANSFORMER, POWER (AUS)	
⚠T601	1-435-995-11	TRANSFORMER, POWER (SP,MY)	
**********			
		ACCESSORIES	
		**********	
	1-751-598-53	CORD, CONNECTION (PIN-PIN)	
	1-790-503-12	CORD, SPEAKER (10m)	
	1-790-503-32	CORD, SPEAKER (3.5m)	
	4-246-138-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH, SPANISH) (US,CND,AUS)	
	4-246-138-51	MANUAL, INSTRUCTION (ENGLISH,FRENCH, SPANISH,TRADITIONAL CHINESE) (SP,MY)	
	4-972-322-01	FOOT (Y) (EXCEPT AUS)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2003. 02	New
1.1	2003. 04	AUS, SP, MY model addition.